



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.06.2015 Bulletin 2015/23

(51) Int Cl.:
G09F 13/04 ^(2006.01) **F21V 21/096** ^(2006.01)
F21V 21/35 ^(2006.01) **G09F 13/18** ^(2006.01)
G09F 7/04 ^(2006.01) **G09F 7/18** ^(2006.01)

(21) Application number: **14191853.2**

(22) Date of filing: **05.11.2014**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
 Designated Extension States:
BA ME

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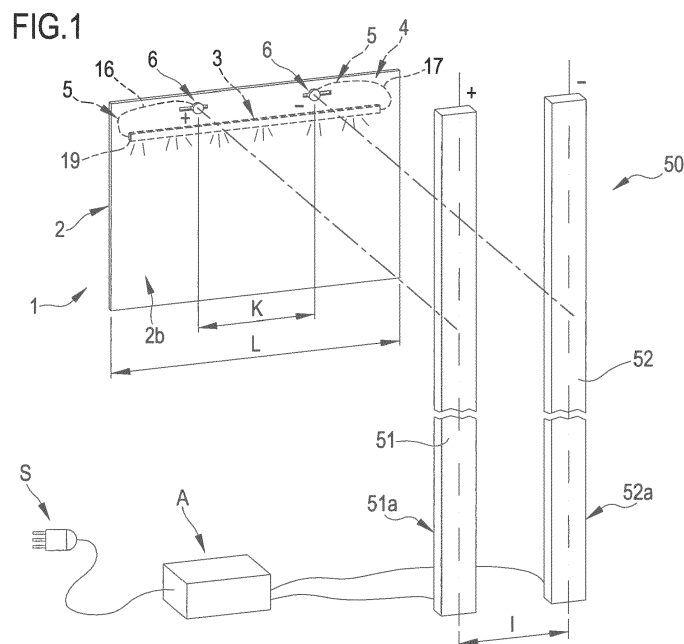
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(30) Priority: **28.11.2013 IT MI20131991**

(54) **Lightable module for supporting laminar objects and advertising display using such a module**

(57) Lightable module (1) for supporting laminar objects comprising a front panel (2) made of at least partly transparent plastic material and having an inner hidden groove (3), preferably mainly extending longitudinally; lighting means (4) housed in the inner hidden groove (3) and suitable to be operated in order to light said front panel (2) during night and/or in at least partial natural or artificial darkness conditions; and wiring or electrical continuity means (5), on one side connected with said lighting means (4) and on the other side suitable to be connected through at least one pair of electrical contact nodes (6)

to a pair of electrified metallic support and power supply elements (51, 52) parallel to each other, spaced apart one from another of a reference distance (l) and belonging to an advertising display (50). Particularly, the electrical contact nodes (6) are integral to the rear wall (2b) of said front panel (2), opposite to the front wall (2a) which in operative conditions remains visible, and are of the quick release type in such a way as to allow easy and immediate removal of said front panel (2) from said electrified metallic support and power supply elements (51, 52).



Description

[0001] The present invention concerns a lightable module (in the jargon also called "back-lit frame") for supporting laminar objects for decoration or information such as posters, photographs, sheets containing written information or images and the like, suitable for being used in shops or commercial or public settings like, for example, banks, travel agencies, estate agencies, showrooms, offices, shops or museums for displaying, especially in windows, advertising information (mainly relating to the products and services provided by such commercial operations) that are suitably and clearly visible to passers-by also at night or in any case where it is dark, or in at least partial natural or artificial darkness conditions, or furthermore in circumstances in which, in general, visibility is for whatever reason reduced, compromised or not optimal.

[0002] The invention presented here also refers to an advertising display using such a lightable module and suitable for being installed especially in windows of commercial operations like, for example, banks, travel agencies, estate agencies, museums and so on.

[0003] As known, in order to display to the public images, photos and/or documents containing written information for advertising, educational and/or similar purposes, able to be consulted and viewed effectively also in the absence of or in poor natural light, typically in commercial or civil settings such as, typically but not exclusively, banks, travel agencies, estate agencies, showrooms, offices, shops or museums, displays are used generally comprising a plurality of lightable modules (better known in the field as "back-lit frames"), aligned with one another along one or more columns or one or more rows, or arranged without any particular logical order, on a pair of electrified metallic support and power supply elements that are parallel to one another and spaced apart, with which the lightable modules are coupled through electrical contact nodes.

[0004] In the prior art, the electrified metallic support and power supply elements of the display structure consist of metallic cables under traction or of structurally rigid metallic rods, arranged according to respective vertical directions and fixed to the floor or ceiling, according to the installation choices, so as to constitute uprights or bearing bodies: such metallic support and power supply elements are electrified thanks to their electrical connection with an electrical energy power source (such as conventionally the power mains) through respective electric cables that make said metallic elements electrified one positively (positive pole) and one negatively (negative pole).

[0005] Each known lightable (or back-lit) module comprises a front panel made of at least partly transparent plastic material (usually polymethylmethacrylate or PMMA) and having an inner hidden groove, preferably having a mainly longitudinal extension, as well as lighting means housed in such an inner hidden groove and suit-

able to be operated in order to light the front panel during night and/or in at least partial natural or artificial darkness conditions, or in conditions of poor or not optimal visibility.

[0006] Moreover, a typical lightable module of advertising displays of the prior art includes wiring or electrical continuity means, connected on one side to the lighting means and, on the other side connected through the electrical contact nodes to the two parallel electrified metallic support and power supply elements of the advertising display, so that the positively electrified metallic element is connected through the respective positive contact node to the positive electric wiring and the negatively electrified metallic element is connected through the respective negative contact node to the negative electric wiring.

[0007] In the configurations of advertising display in question currently on the market, the electrical contact points or nodes are positioned on the opposite outer side edges of the lightable modules so that they receive the power supply of the rail structure made up of the two electrified metallic elements that are in this way separated from one another by a distance exactly equal to the width of the lightable module itself.

[0008] The negative consequence of this is that a known rail structure, made up of metallic elements that are electrified one positively and the other negatively and in a preferred manner connected to the power mains, can support and power only lightable modules having widths equal to the width determined by the distance apart of the electrified metallic elements of such a rail structure.

[0009] A further drawback of the prior art, connected to the mechanical system with which the various lightable modules are stably coupled with the two electrified metallic support and power supply elements, consists of the fact that the constructive composition of the electrical contact nodes involves operations that are complicated and wasteful, particularly in terms of time, when it is wished to separate (and subsequently couple) the lightable modules from (with) the rail supporting structure.

[0010] The last but not least drawback of the prior art derives from the fact that the position taken up by the electrical contact nodes in application conditions determines a structural discontinuity that, although minimised, has a negative impact on the overall appearance of the advertising displays in question. Therefore, starting from the recognition of the drawbacks of the current state of the art outlined above, the present invention intends to overcome them fully.

[0011] In particular, the main purpose of the current invention is to provide a lightable (or back-lit) module for supporting laminar objects that can be separated/coupled from/with the rail structure of electrified metallic support and power supply elements of an advertising display in a more practical, quicker and easier manner than what is allowed by equivalent known lightable modules.

[0012] In such a purpose, a task of the invention is to create a lightable module for supporting laminar objects

that can be separated/applied from/to the rail structure of electrified metallic support and power supply elements of an advertising display without difficulty even by an untrained person.

[0013] A second purpose of the invention is to create a lightable module for supporting laminar objects that compared to the prior art involves less points of structural discontinuity when coupled with the electrified metallic support and power supply elements, so that the overall appearance of the advertising displays to which such a lightable module belongs is better, in the sense of being more linear and continuous, with respect to that offered by analogous known displays.

[0014] A further purpose of the present invention is to devise an advertising display that, by using one or more lightable modules for supporting laminar objects, has better installation times and costs than those of known advertising displays of the conventional type currently on the market.

[0015] The last but not least purpose of the current invention is to devise an advertising display that is more versatile in use than known advertising displays.

[0016] According to a first aspect, the present invention relates to a lightable (or back-lit) module for supporting laminar objects according to the attached claim 1, to which we refer for the sake of brevity.

[0017] Advantageously, the lightable module for supporting laminar objects of the invention can be applied/separated to/from the relative pair of electrified metallic support and power supply elements quicker, easier and in a more practical way than the comparable lightable modules of the prior art.

[0018] This is thanks to the fact that the electrical contact nodes with which the front panel is removably coupled at the two electrified metallic support and power supply elements of the advertising display are of the quick release type, comprising magnets (preferred variant embodiment), hooks (or crooks), couplers (for example of the bayonet type), joints and/or similar mechanical coupling systems.

[0019] Further advantageously, the lightable module (or back-lit frame) of the present invention comprises electrical contact nodes having a very simple constructive composition, or in any case simpler than those currently used: this aspect simplifies the installation of the lightable modules of the invention on the electrified metallic support and power supply elements of the advertising display. According to a further aspect, the present invention relates to an advertising display using the aforementioned lightable (or back-lit) module according to the attached claim 15, to which we again refer for the sake of simplicity. Advantageously, the advertising display of the invention has a more linear, uniform and homogeneous appearance than that of the equivalent known advertising displays: this is due to the fact that the electrical contact nodes are arranged in the rear wall of the front panel of the lightable module of the invention.

[0020] Advantageously, moreover, the advertising dis-

play of the invention has substantial structural stability, better than that which can be obtained for similar advertising displays of the prior art.

[0021] In at least one of the above aspects, the present invention can comprise at least one of the preferred features described in the following; these features can be indifferently combined with each other in order to satisfy specific applicative requirements.

[0022] Preferably, the electrical contact nodes are spaced apart from each other of a predetermined distance having a value equal to said reference distance. Preferably, the reference distance is lower than the width of said front panel. Preferably, the electrical contact nodes are made of metal and define a positive contact pole suitable for connecting the wiring and electrical continuity means with a first positively electrified metallic support and power supply element, and a negative contact pole suitable for connecting the wiring and electrical continuity means to a second negatively electrified metallic support and power supply element.

[0023] Preferably, the electrical contact nodes are four in number, and are arranged according to the vertices of a square whose side size is equal to the reference distance, the electrical contact nodes are further electrically connected to the lighting means in such a manner that a first pair of electrical contact nodes defines the positive contact pole and a first neutral pole, and a second pair of electrical contact nodes defines the negative contact pole and a second neutral pole, the neutral poles being symmetrically and inversely arranged with respect to each other and the positive contact pole and the negative contact pole being symmetrically and inversely arranged with respect to each other.

[0024] More preferably, the electrical contact nodes are supported on a rear panel coupled to the rear wall of said front panel.

[0025] Even more preferably, the electrical contact nodes defining the positive contact pole and the negative contact pole are connected to the lighting means by means of wiring or electrical continuity means running externally with respect to the front panel.

[0026] According to a further preferred embodiment, the rear support panel has substantially the same surface dimensions as the front panel, the wiring or electrical continuity means being placed internally to the rear panel.

[0027] Preferably, the electrical contact nodes are coupled to the rear wall of the front panel or to the rear panel by means of fastening means in such a manner as to partly protrude from the rear wall of the front panel or from the rear panel. Preferably, the fastening means comprise at least one means of stable but quick releasable connection selected from the group consisting of magnets, hooks or mechanical couplings and the like.

[0028] More preferably, the magnet means of stable but quick releasable connection are partly housed in a peripheral recess communicating with the outside and made in the rear wall of the front panel or in the rear panel.

[0029] Preferably, the fastening means comprise:

- a screw which can be operated by an operator using a tool;
- a through hole obtained in each of said magnets;
- a nut screw coaxial to the through hole and obtained in the thickness of the front panel starting from the rear wall,

wherein the screw engages the nut screw by fitting into the through hole so as to be totally contained in the overall bulk defined by each magnet.

[0030] Preferably, the lighting means and the wiring or electrical continuity means are housed in the inner hidden groove.

[0031] Preferably, the wiring or electrical continuity means comprise a first electrical connection connecting the lighting means with a positive pole corresponding to one of the electrical contact nodes, and a second electrical connection connecting the lighting means to a negative pole corresponding to another of said electrical contact nodes.

[0032] More preferably, each of the first and second electrical connection has a first end firmly secured to a terminal washer housed in the peripheral recess and interposed and pressed between a magnet and the front panel and a second end secured from opposite sides to a laminar support plate housed in the inner hidden groove and supporting the lighting means.

[0033] Preferably, the front panel includes a laminar base substrate made of plastic material at least partially not permeable to light and a laminar screen made of transparent plastic material.

[0034] More preferably, the laminar base substrate has a white background.

[0035] More preferably, the laminar screen is laser-marked and/or is suitable to house the laminar objects.

[0036] Preferably, the electrified metallic support and power supply elements comprises any of the conductive elements selected from the group consisting of wires, rods, bars, profiles and the like.

[0037] Preferably, the means of stable but quick releasable connection of each electrical contact node protruding from the rear wall of the front panel or the rear panel of a lightable module engage into slots obtained in the front surface of the electrified metallic support and power supply elements.

[0038] Further features and advantages of the present invention will become clearer from the following description, relative to preferred embodiments of the lightable (or back-lit) module and of the advertising display object of the invention, given to indicate and illustrate, but not for limiting purposes, with reference to the attached tables of drawings in which:

- figure 1 is a partially exploded axonometric view from the rear side of the lightable module and of the advertising display of the invention;
- figure 2 is a partial axonometric view of the lightable module and of the advertising display of figure 1;

- figure 3 is a cross section view of a constructive assembly of the lightable module of figure 1;
- figure 4 is an exploded axonometric view of some components of figure 3;
- 5 - figure 5 is a side view from the rear side of a variant embodiment of the lightable module of figure 1;
- figures 6a-6b schematically show, as an example, the sequence with which it is possible to vary the spatial orientation of the lightable module of figure 5 on the advertising display of the invention without carrying out any circuit or structural modification;
- figure 7 is an axonometric view of the rear part of a second variant embodiment of the lightable module of figure 1;
- 15 - figure 8 is a side view of the rear part of the variant embodiment of figure 7 with the display schematized;
- figure 9 is an axonometric view of a variant embodiment of the advertising display of figure 1;
- figure 10 is an axonometric view of a further variant embodiment of the lightable module of figure 1 and of the advertising displays of figure 1 and 9.

[0039] The lightable module for supporting laminar objects of the invention, as well as the advertising display of the invention, are illustrated in application or installation conditions, i.e. potentially coupled together given that it concerns an exploded view, in figure 1 where they are respectively and globally numbered with 1 and 50.

[0040] As can be seen, the lightable (or back-lit) module 1 comprises:

- a front panel 2 made of at least partly transparent plastic material and having an inner hidden groove 3, preferably having a mainly longitudinal extension that is purely linear in this specific case;
- 35 - lighting means, wholly numbered with 4, housed in the inner hidden groove 3 and suitable to be operated in order to light the front panel during night and/or in at least partial natural or artificial darkness conditions, or in conditions of reduced or in any case not optimal visibility;
- wiring or electrical continuity means, wholly indicated with 5, on one side connected to the lighting means 4 and on the other side suitable for being connected through, in this specific case, a pair of electrical contact nodes 6 to a pair of electrified metallic support and power supply elements 51, 52 that are parallel to one another, spaced apart by a reference distance l and belonging to the advertising display 50.

[0041] In accordance with the invention, the electrical contact nodes 6 are coupled with the rear wall, opposite the front wall 2a that in application conditions remains in view, of the front panel 2 and they are of the quick release type so as to allow the easy and immediate removal of the front panel 2 itself from the electrified metallic support and power supply elements 51, 52.

[0042] In this case, preferably but not necessarily, the electrical contact nodes 6 are contained in the overall dimensions defined by the front panel 2 and the reference distance I that spaces apart the two electrified metallic support and power supply elements 51, 52 and also the predetermined distance K that spaces apart the two electrical contact nodes 6 are less than the width L of the front panel 2: such a constructive provision creates a situation that allows the admissible width of the lightable module of the invention to be advantageously unlinked (or made independent) from the width of the rail power supply bearing structure.

[0043] In other words, the lightable module 1 of the invention, thanks to the positioning of the electrical contact nodes 6 in the rear wall 2b of the front panel 2 and to the maintaining of a predetermined fixed distance K, constant between such electrical contact nodes 6, makes it possible to position on the rail bearing structure - represented by the two electrified metallic support and power supply elements 51, 52 - lightable modules (or back-lit frames) of any width, unlike what happens in the prior art, with the obvious advantages in terms of versatility of use that this involves for the lightable module of the invention.

[0044] In a preferred and not limiting manner, but particularly advantageously, as clearly highlighted in figure 2, the electrical contact nodes 6 are spaced apart by a predetermined distance K having a value exactly equal to that of the reference distance I with which the electrified metallic support and power supply elements 51, 52 are spaced apart in order to make the coupling of the lightable module 1 of the invention with the latter even easier and quicker.

[0045] Moreover, the electrical contact nodes 6 are of the metallic type and define a positive contact pole, indicated with "+" in figures 1 and 2, suitable for connecting the wiring and electrical continuity means 5 with a first of the metallic supporting elements 51, 52, positively electrified, and a negative contact pole, indicated with "-" in figures 1 and 2, suitable for connecting the wiring and electrical continuity means 5 with a second of the metallic supporting elements (51, 52), negatively electrified.

[0046] In a preferred but not exclusive manner, the two electrical contact nodes 6 are coupled with the rear wall 2b of the front panel 2 through fastening means, wholly numbered with 7, so as to partially project from such a rear wall 2b of the front panel 2, as can be clearly seen from figure 3.

[0047] In particular, each of the electrical contact nodes 6 comprises any of the stable, but removable, connection components through quick release, selected from the group consisting of magnets (used in the example in the description where they are indicated with 8), hooks or mechanical couplers and similar.

[0048] Figure 3 clearly illustrates that, in the case under examination, the magnets 8, for example made from neodymium, are partially housed in a peripheral recess 9 communicating with the outside and formed in the rear

wall 2b of the front panel 2.

[0049] According to the preferred embodiment described here of the invention, the fastening means 7 introduced above preferably comprise:

- a screw 10 which can be handled by the operator using a tool;
- a through hole 11 made in each of the magnets 8;
- a nut screw 12, coaxial to the through hole 11, made in the thickness S of the front panel 2 starting from the rear wall 2b.

[0050] In application, the screw 10, after passing through the through hole 11, engages in the nut screw 12 so as to make the magnet 8 fixedly connected to the front panel 2 and, at the same time, totally contained in the overall dimensions defined by each of the magnets 8.

[0051] In greater detail, preferably although not necessarily, the screw 10 is provided with a countersunk flat head 13 that, when the screw 10 itself is totally screwed into the nut screw 12, is housed in an axial seat 14 delimited by a tapered annular wall 15 and formed in the magnet 8 so as to communicate with the outside and be coaxial to the through hole 11, as also highlighted by figure 4.

[0052] By doing so, the outer surface 13a of the countersunk flat head 13 of the screw 10 is suitably coplanar to the outer face 8a of the magnet 8 when the screw 10 is totally screwed into the nut screws 11 and 12.

[0053] As far as the lighting means 4, typically and preferably comprising a plurality of LEDs, and the wiring or electrical continuity means 5 are concerned, both of these generic components of the lightable module 1 of the invention are housed in the inner hidden groove 3.

[0054] Figure 1 shows that the wiring or electrical continuity means 5 comprise a first electrical connection 16 (typically an electric wire or other conducting means like a strip of brass, iron and so on) that connects the lighting means 4 to a positive contact pole corresponding to one of the electrical contact nodes 6, and a second electrical connection 17 (again such as a conductive wire, a strip of brass, iron or similar) that connects the lighting means 4 to a negative pole corresponding to the other of the electrical contact nodes 6.

[0055] Each of the aforementioned electrical connections (first and second) 16, 17 has a first end firmly secured to a terminal washer 18, clearly visible in figures 3 and 4, housed in the peripheral recess 9 and arranged and pressed between each of the magnets 8 and the front panel 2, and a second end secured on opposite sides to a laminar support plate 19, visible in figure 1, housed in the inner hidden groove 3 and supporting the lighting means 4, notably the LEDs introduced before.

[0056] Figure 3 also illustrates that, only preferably, the front panel 2 comprises a laminar base substrate 20 made from plastic material, like for example methyl methacrylate (or polymethylmethacrylate, also known by the acronym PMMA or by the trade name plexiglas), having

a background not permeable to light, for instance a white background, and in general a thickness S_1 having a value, purely for indication, equal to about 3mm.

[0057] In addition, the front panel 2 includes a laminar screen 21 firmly secured through the aforementioned fastening means 7 to the laminar base substrate 20 and made from transparent plastic material, again such as methyl methacrylate (or PMMA), laser-marking worked and having a thickness S_2 equal for example to 6 mm, in any case greater than the thickness S_1 of the laminar base substrate 20: the laminar screen 21 receives the laminar objects to make them available and consultable by people going past the advertising display 50.

[0058] As a function of such a constructive composition of the front panel 2, therefore, the peripheral recess 9 is formed in the laminar base substrate 20, whereas the nut screw 12 is formed in the laminar screen 21.

[0059] Preferably, the front panel 2 is completed with a perimeter finishing frame (not represented in the following drawings for the sake of simplicity) that hides the inner hidden groove (or track) 3 from view and that improves the appearance of the product.

[0060] Figure 5 shows a first possible variant embodiment of the invention in which the lightable module, now globally numbered with 70, differs from the one just described and indicated with 1 for the number of electrical contact nodes 74 with which the front panel 71 is connected to the electrified metallic support and power supply elements 101, 102 of the advertising display, wholly indicated with 100 and shown in schematic and simplified form in figures 6a-6c.

[0061] Indeed, in this second example embodiment, the electrical contact nodes 74 are four in number, arranged according to the vertices of a square (or of a matrix 2x2) the side T of which is equal to the reference distance l and electrically connected to the lighting means, wholly indicated with 72, so that a first pair of electrical contact nodes 74 defines the positive contact pole (indicated with "+" in figure 5) and a first neutral pole (indicated with N_1 in figure 5), and a second pair of electrical contact nodes 74 defines the negative contact pole (indicated with "-" in figure 5) and a second neutral pole (indicated with N_2 in figure 5): suitably, the neutral poles N_1 and N_2 are symmetrically and inversely arranged with respect to one another and the positive and negative contact poles 74 are symmetrically and inversely arranged with respect to one another.

[0062] Basically, therefore, each electrified pole 74 is aligned vertically and horizontally with one of the neutral poles N_1 and N_2 .

[0063] Of course, like in the previous case, the first electrical connection 75 of the wiring means 73 connects the lighting means 72 to the positive contact pole corresponding to one of the electrical contact nodes 74, and the second electrical connection 76 connects the lighting means 72 to the negative pole corresponding to the other of the electrical contact nodes 74.

[0064] The versatility of use of the variant embodiment

of lightable module 70 illustrated in figure 5 is even greater with respect to that offered by the first solution of lightable module described earlier and depicted in figures 1-4, and it makes it possible to obtain an advantage not found in equivalent lightable modules of the prior art.

[0065] As illustrated, indeed, by the sequence of figures 6a-6c, the lightable module 70 is rotatable by angles of 90° , in the direction (in this case anti-clockwise) indicated by the arrows F and set by the polarity of the electrified metallic elements 101, 102, from the position with vertical orientation (or North-South) to the position with horizontal orientation (or West-East) and from this back to the position with vertical orientation again in the same direction without losing the electrical continuity between positive contact pole (node) 74 and positively electrified metallic support and power supply element 101 and negative contact pole (node) and negatively electrified metallic support and power supply element 102 and, therefore, without losing its effective functionality.

[0066] Of course, despite the presence of the two neutral poles, if the polarity of the electrified metallic support and power supply elements is inverted with respect to that indicated in figures 6a-6c (and therefore also the positive electrical contact node and the negative electrical contact node are inverted with respect to the position indicated in such figures), the rotation by angles of 90° of the lightable module of the invention that ensures the aforementioned electrical continuity will happen in the anti-clockwise direction, whereas if the polarity of the electrified metallic support and power supply elements is again inverted with respect to that indicated in figures 6a-6c and, for whatever operative requirement, the electrical contact nodes are only symmetrically arranged with respect to that indicated in figures 6a-6c, in order to ensure the electrical continuity it is necessary to rotate the lightable module of the invention by angles of 90° in the clockwise direction. Keeping the distance between the electrical contact nodes 74 constant, it is, therefore, possible for every single lightable module equipped with the constructive type indicated with 70:

- not only to build a series of versions of lightable module 70 that are different to each other in profile and dimensions, all in any case suitable for being effectively mounted on the same electrified track bearing structure 101, 102 of the advertising display 100,
- but also to define two different functionally and aesthetically effective configurations of the same lightable module 70 on such an electrified track bearing structure 101, 102 without modifying the position thereof, allowing the user to vary the display layout of the lightable modules 70 on the advertising display 100 as desired over time, following ever-changing aesthetic requirements.

[0067] In case of a wide lightable module 70', a rear support panel 80 is applied to the laminar base substrate 20 to support the four electrical contact nodes 74 which,

also in this case, are arranged according to the vertices of a square (or of a matrix 2x2) the side T of which is equal to the reference distance, so that a first pair of electrical contact nodes 74 defines the positive contact pole (indicated with "+" in figure 7) and a first neutral pole (indicated with N_1 in figure 7), and a second pair of electrical contact nodes 74 defines the negative contact pole (indicated with "-" in figure 7) and a second neutral pole (indicated with N_2 in figure 7).

[0068] The electrical contact nodes 74 defining the positive contact pole and the negative contact pole are connected to the lighting means 72 by means of a first 75' and a second 76' electrical connection, typically an electric wire or other conducting means like e.g. a brass or iron plate or the like.

[0069] In the embodiment depicted in figures 7 and 8, the rear support panel 80 has a lateral size L slightly greater than the side T of the square at whose vertices the electrical contact nodes 74 are arranged, and the first 75' and a second 76' electrical connections run along the rear surface of the laminar base substrate 20 until they reach an inlet interface for entering the laminar base substrate 20 and reaching the lighting means 72.

[0070] In an alternative embodiment (not shown), the rear support panel 80 has dimensions substantially equal to the surface of the laminar base substrate 20 and internally hosts the electrical connections 75', 76'.

[0071] In this way, also wide lightable modules 70' can be indifferently connected to the couple of electrified metallic support and power supply elements 101, 102 according to a horizontal or vertical arrangement, since the electrical continuity is maintained also in case of 90° rotations.

[0072] Preferably, the rear panel 80 is made of electrically isolating material, like e.g. wood or plastics.

[0073] As stated, the object of the present invention is also an advertising display, globally numbered with 50 or 100 in figures 1 and 2, suitable in particular for being installed at windows of commercial operations like, for example, banks, travel agencies, estate agencies, museums, showrooms and so on.

[0074] It should be observed that the advertising display 50 or 100 comprises:

- a pair of parallel electrified metallic support and power supply elements 51, 52 or 101, 102, spaced apart by a reference distance I, suitable for being firmly coupled with an abutment surface R at an area accessible to people and for being electrically connected to an electrical energy power source S so that one of the metallic elements 51, 52 or 101, 102 constitutes a positively electrified contact pole and the other of the metallic elements 51, 52 or 101, 102 constitutes the negatively electrified contact pole;
- a plurality of lightable modules for supporting laminar objects of the type just described, each of which is wholly indicated with 1 or 70, 70'.

[0075] According to the invention, the electrical contact nodes 6 or 74 are firmly secured to the rear wall 2b or 71b opposite the front wall 2a that in application conditions remains in view, of the front panel 2 or 71 and removably coupled with the front surface 51a, 52a or 101a, 102a of the electrified metallic support and power supply elements 51, 52 or 101, 102 so as to allow the easy and immediate removal of the front panel 2, 71 from the electrified metallic support and power supply elements 51, 52 or 101, 102.

[0076] The electrified metallic support and power supply elements 51, 52 or 101, 102 include any of the conductive components selected from the group consisting of cables, rods, bars, profiles and similar.

[0077] In addition, each of the electrified metallic support and power supply elements 51, 52 or 101, 102 comprises an upright that is arranged vertically when coupled with the abutment surface R and is electrically connected to the electrical mains S through the interposition of a low voltage power feeder A, for example 6 Volt, 12 Volt or 24 Volt according to the type of lighting means installed on the lightable module.

[0078] Preferably, each of the electrical contact nodes 6 or 74 comprises any of the stable connection components, but removable through quick release, selected from the group consisting of magnets 8, hooks or mechanical couplers and similar.

[0079] In particular, the embodiment of advertising display of the invention that foresees hooks or mechanical couplers as electrical contact nodes is not accompanied hereafter by any explicative drawing; in any case, the hooks or mechanical couplers protrude from the rear wall of the front panel and engage in slots formed in the front surface of the electrified metallic support and power supply elements.

[0080] Figure 9 highlights, purely as an example, a further variant embodiment of the invention in which the advertising display, now globally indicated with 150, has a more complex and larger composition in this case comprising three pairs of electrified metallic support and power supply elements 151 and 152, 153 and 154, 155 and 156, each of which includes a plurality of lightable modules of the type described earlier and indicated with 1 in figures 1-4.

[0081] Figure 10 finally shows another constructive solution of the invention in which the advertising display, now globally indicated with 200, comprises two electrified metallic support and power supply elements 201, 202 and a series of lightable modules, each of which indicated with 90, which differ from one another in size.

[0082] Such a figure explicitly clarifies one of the advantages obtained by the invention with respect to the prior art, highlighting how it makes it possible to apply lightable modules of different sizes to the same electrified track bearing structure of the advertising display by firstly exploiting the positioning of the electrical contact nodes on the rear wall of the front panel and secondly the provision of a reference distance I that spaces apart the two

electrified metallic support and power supply elements of lower value than the width of the front panel. Moreover, the lightable modules with four electrical contact nodes arranged like a matrix can be connected to the advertising display according to a horizontal or vertical arrangement according to specific displaying needs.

[0083] According to the description just provided it can therefore be understood that the lightable module for supporting laminar objects and the advertising display using or comprising such a lightable module, both object of the present invention, achieve the purposes and obtain the advantages mentioned earlier.

[0084] In the embodiment step, it is possible to make modifications to the lightable module of the invention, consisting, for example, of foreseeing different lighting means from those described earlier.

[0085] As well as this, there can be further constructive solutions (not represented) of the lightable module that is claimed here exclusively in which the quick release ensured by the electrical contact nodes, fixedly secured to the rear wall of the front panel, has a different constructive composition from those highlighted during the description, which does not nullify the advantage obtained by the present invention.

[0086] Moreover, in other variant embodiments of the invention, not depicted in the following tables of drawings, the advertising display can include a different number of pairs of electrified metallic support and power supply elements from that described earlier with reference to the attached figures, such a number being able to vary as desired from one based on the design choices and/or the space available.

[0087] Regarding this, it should be specified that in order to give greater structural stability to the advertising display of the invention, the various electrified metallic support and power supply elements can be not only firmly secured to the abutment surface but also to one another through connecting cross members generally extending horizontally.

[0088] Finally, alternative variants of the invention, again not illustrated, can foresee that the advertising display comprises a different number of lightable modules from what is visible in the attached figures relative to just a few preferred embodiments that can be made with the inventive concept expressed in the present document; in particular, the number of lightable modules of the advertising display can also vary as desired starting from one.

[0089] Finally, it is clear that numerous other variants can be brought to the lightable module and to the advertising display under examination, without for this reason departing from the novelty principles at the core of the inventive idea, just as it is clear that, in the practical embodiment of the invention, the materials, the shapes and the sizes of the illustrated details can be whatever, according to the requirements, and they can be replaced with others that are technically equivalent. Where the constructive characteristics and the techniques mentioned in the subsequent claims are followed by marks

or reference numerals, such reference marks have been introduced with the sole purpose of making the claims themselves more intelligible and, consequently, they have no limiting effect on the interpretation of each element identified, purely as an example, by such reference marks.

Claims

1. Lightable module (1; 70; 70'; 90) for supporting laminar objects comprising:

- a front panel (2; 71) made of at least partly transparent plastic material and having an inner hidden groove (3);

- lighting means (4; 72) housed in said inner hidden groove (3) and suitable to be operated in order to light said front panel (2; 71) during night and/or in at least partial natural or artificial darkness conditions;

- wiring or electrical continuity means (5; 73), on one side connected with said lighting means (4; 72) and on the other side suitable to be connected through at least one pair of electrical contact nodes (6; 74) to a pair of electrified metallic support and power supply elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202) parallel to each other, spaced apart one from another of a reference distance (I) and belonging to an advertising display (50; 100; 150; 200),

characterized in that said electrical contact nodes (6; 74) are integral to the rear wall (2b; 71b) of said front panel (2; 71), opposite to the front wall (2a) which in operative conditions remains visible and are of the quick release type in such a way as to allow easy and immediate removal of said front panel (2; 71) from said electrified metallic support and power supply elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202).

2. Module (1; 70; 70'; 90) according to claim 1 **characterized in that** said electrical contact nodes (6; 74) are spaced apart from each other of a predetermined distance (K) having a value equal to said reference distance (I).

3. Module (1; 70; 70'; 90) according to claim 1 or 2, **characterized in that** said electrical contact nodes (6; 74) are made of metal and define a positive contact pole (+) suitable for connecting said wiring and electrical continuity means (5; 73) to a first positively electrified metallic support and power supply element (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202), and a negative contact pole (-) suitable for connecting said wiring and electrical continuity means (5; 73) to a second negatively electrified

metallic support and power supply elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202).

4. Module (1; 70; 70'; 90) according to any of the preceding claim **characterized in that** said electrical contact nodes (74) are four in number, and are arranged according to the vertices of a square whose side size (T) is equal to said reference distance (I), the electrical contact nodes (74) being further electrically connected to said lighting means (72) in such a manner that a first pair of said electrical contact nodes (74) defines said positive contact pole (+) and a first neutral pole (N₁), and a second pair of said electrical contact nodes (74) defines said negative contact pole (-) and a second neutral pole (N₂), said neutral poles (N₁, N₂) being symmetrically and inversely arranged with respect to each other and said positive contact pole (+) and said negative contact pole (-) being symmetrically and inversely arranged with respect to each other.
5. Module (1; 70; 70'; 90) according to claim 4, **characterized in that** said electrical contact nodes (74) are supported on a rear panel (80) coupled to the rear wall (2b; 71b) of said front panel (2; 71).
6. Module (1; 70; 70'; 90) according to claim 5, **characterized in that** said electrical contact nodes (74) defining said positive contact pole (+) and said negative contact pole (-) are connected to the lighting means (4; 72) by means of wiring or electrical continuity means (75', 76') running externally with respect to said front panel (2; 71).
7. Module (1; 70; 70'; 90) according to claim 5 or 6, **characterized in that** said rear support panel (80) has substantially the same surface dimensions as the front panel (2; 71), said wiring or electrical continuity means (75', 76') being placed internally to said rear panel (80).
8. Module (1; 70; 70'; 90) according to any of the preceding claims, **characterized in that** said electrical contact nodes (6; 74) are coupled to said rear wall (2b; 71b) of said front panel (2; 71) or to said rear panel (80) by means of fastening means (7) in such a manner as to partly protrude from said rear wall (2b; 71b) of said front panel (2; 71) or from said rear panel (80).
9. Module (1; 70; 70'; 90) according to any of the preceding claims, **characterized in that** each of said electrical contact nodes (6; 74) comprises any of the elements of stable but quick releasable connection selected from the group consisting of magnets (8), hooks or mechanical couplings and the like.
10. Module (1; 70; 70'; 90) according to claim 9 **characterized in that** said magnets (8) are partly housed in a peripheral recess (9) communicating with the outside and made in said rear wall (2b; 71b) of said front panel (2; 71) or in said rear panel (80).
11. Module (1; 70; 70'; 90) according to any of claims from 8 to 10 **characterized in that** said fastening means (7) comprise:
- a screw (10) which can be operated by an operator using a tool;
 - a through hole (11) obtained in each of said magnets (8);
 - a nut screw (12) coaxial to said through hole (11) and obtained in the thickness (S) of said front panel (2; 71) starting from said rear wall (2b; 71b),
- wherein said screw (10) engages said nut screw (12) by fitting into said through hole (11) so as to be totally contained in the overall bulk defined by each magnet (8).
12. Module (1; 70; 70'; 90) according to any of the preceding claims, **characterized in that** said wiring or electrical continuity means (5; 73) comprise a first electrical connection (16; 75) connecting said lighting means (4; 72) with a positive pole (+) corresponding to one of said electrical contact nodes (6; 74), and a second electrical connection (17; 76) connecting said lighting means (4; 72) to a negative pole (-) corresponding to another of said electrical contact nodes (6; 74).
13. Module (1; 70; 70'; 90) according to claim 12, **characterized in that** each of said first (16; 75) and second electrical connection (17; 76) has a first end firmly secured to a terminal washer (18) housed in said peripheral recess (9) and interposed and pressed between a magnet (8) and said front panel (2; 71) and a second end secured from opposite sides to a laminar support plate (19) housed in said inner hidden groove (3) and supporting said lighting means (4; 72).
14. Module (1; 70; 70'; 90) according to any of the preceding claims, **characterized in that** said front panel (2; 71) includes a laminar base substrate (20) made of plastic material at least partially not permeable to light and a laminar screen (21) made of transparent plastic material and laser-marking worked and suitable to house said laminar objects.
15. Advertising display (50; 100; 150; 200) comprising:
- at least one pair of electrified metallic support and power supply elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202) parallel

to each other, spaced apart one from another of a reference distance (l), suitable to be firmly coupled to an abutment surface at an area accessible to people and to be electrically connected with a power supply (S) in such a manner that one of said metallic elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202) defines a positively electrified contact pole and the other one of said metallic elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202) defines the negatively electrified contact pole;

- at least one lightable module (1; 70; 90) for supporting laminar objects that includes:

- a front panel (2; 71) made of at least partly transparent plastic material and having an inner hidden groove (3);
- lighting means (4; 72) housed in said inner hidden groove (3) and suitable to be switched on in order to light said front panel during night and/or at least partial natural or artificial darkness conditions;
- wiring or electrical continuity means (5; 73), on one side connected with said lighting means (4; 72) and on the other side suitable to be connected with said electrified metallic support and power supply elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202) through at least one pair of electrical contact nodes (6; 74),

characterized in that said nodes of electrical contact (6; 74) are integral to the rear wall (2b; 71b) of said front panel (2; 71), opposite to the front wall (2a) which in operative conditions remains visible, and removably coupled with the front surface (51 a, 52a; 101 a, 102a) of said electrified metallic support and power supply elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202) in such a manner as to allow easy and immediate removal of said front panel (2; 71) from said electrified metallic support and power supply elements (51, 52; 101, 102; 151, 152, 153, 154, 155, 156; 201, 202).

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FIG.1

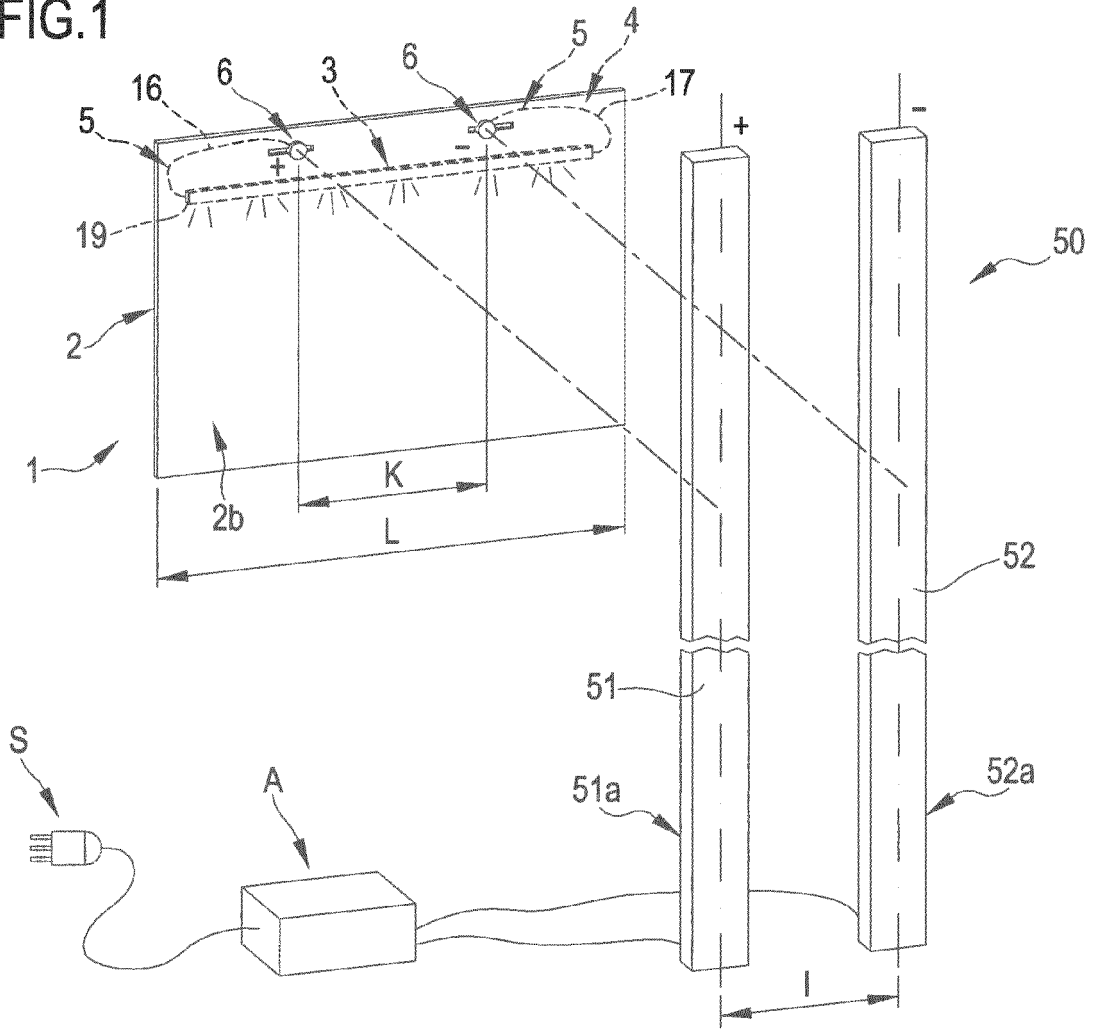
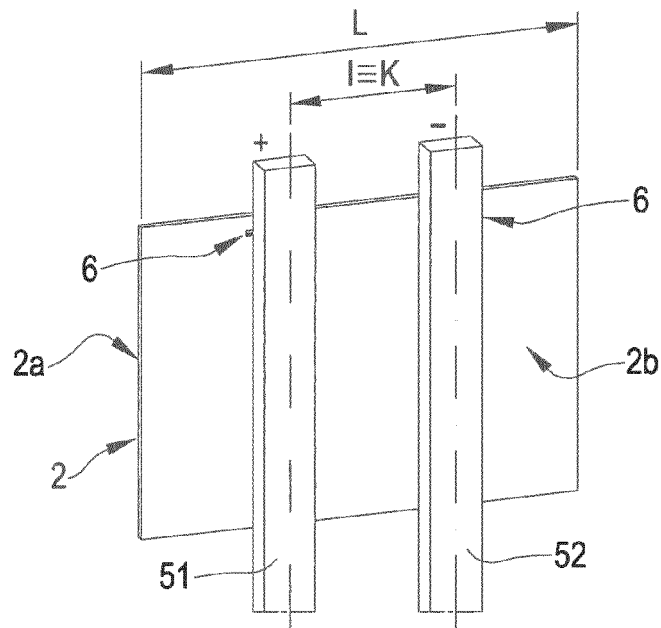


FIG.2



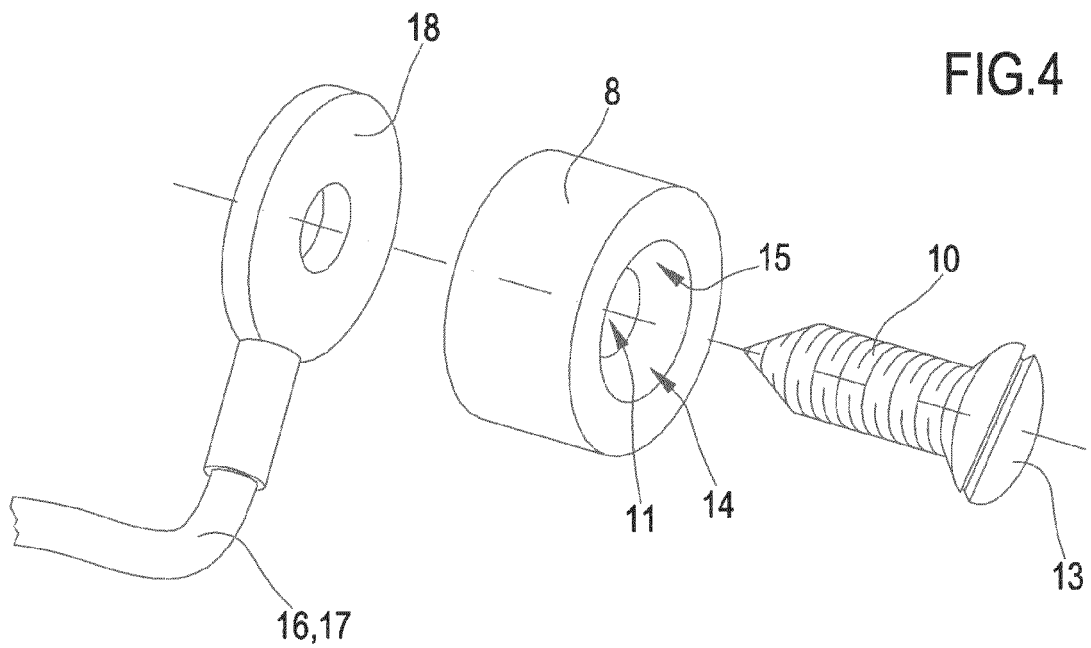
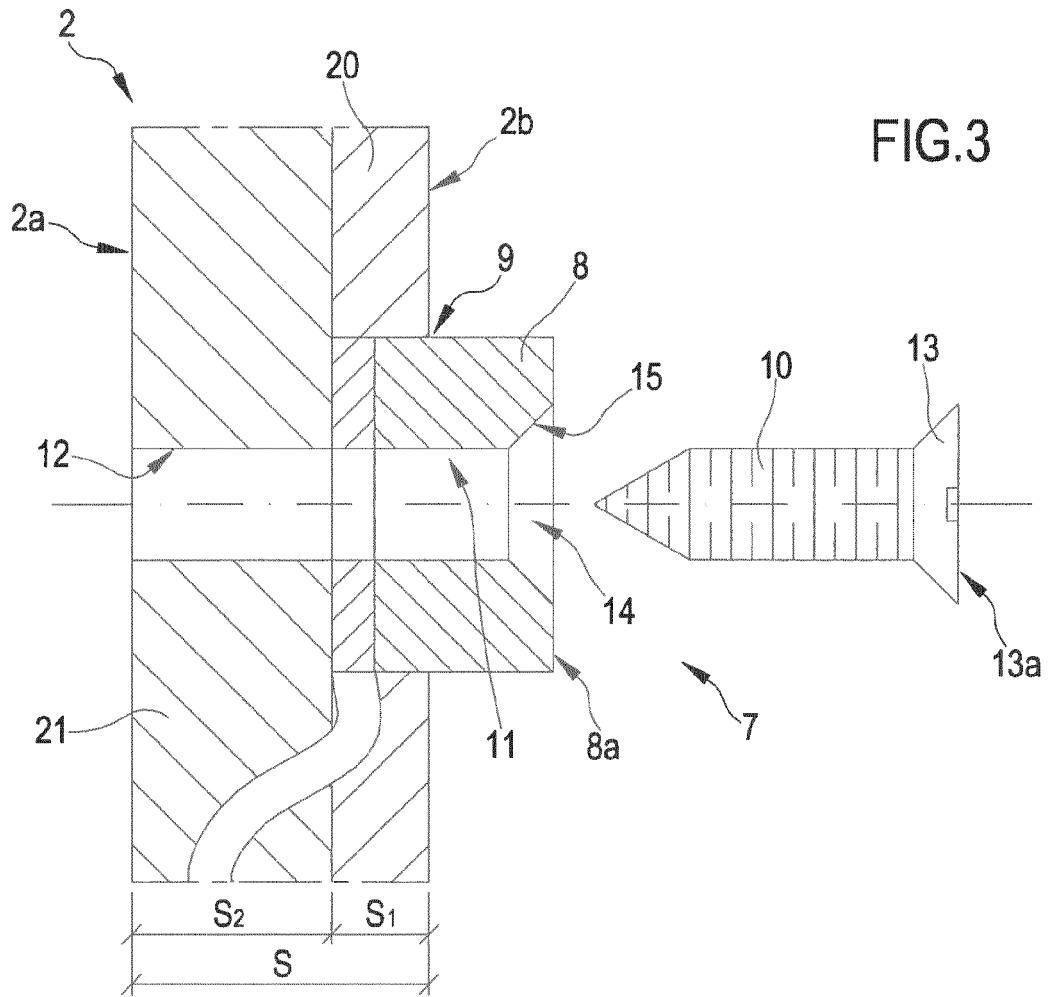


FIG.5

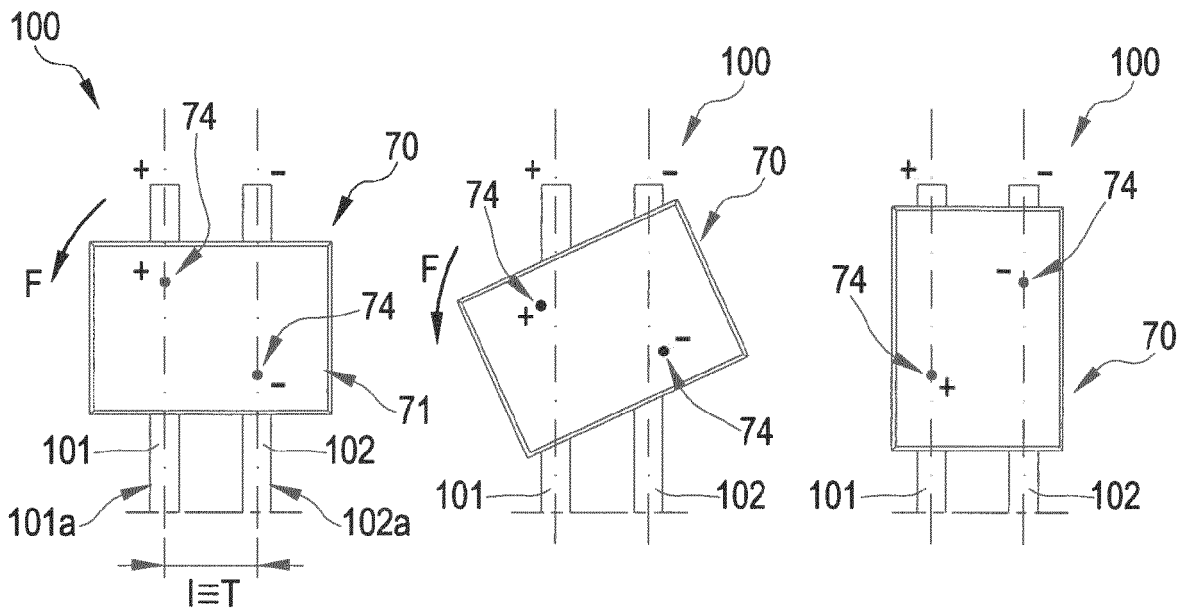
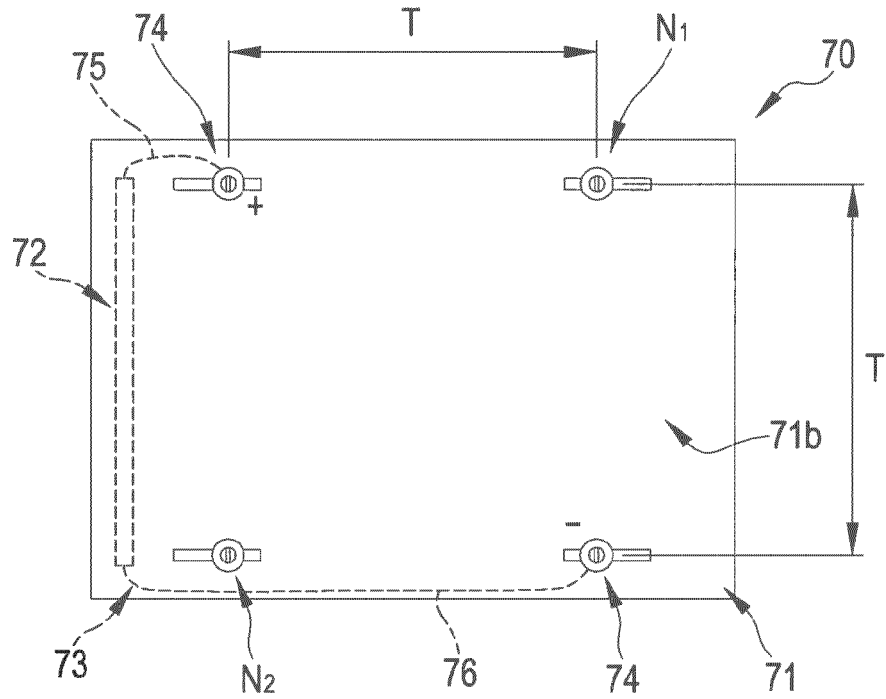


FIG.6a

FIG.6b

FIG.6c

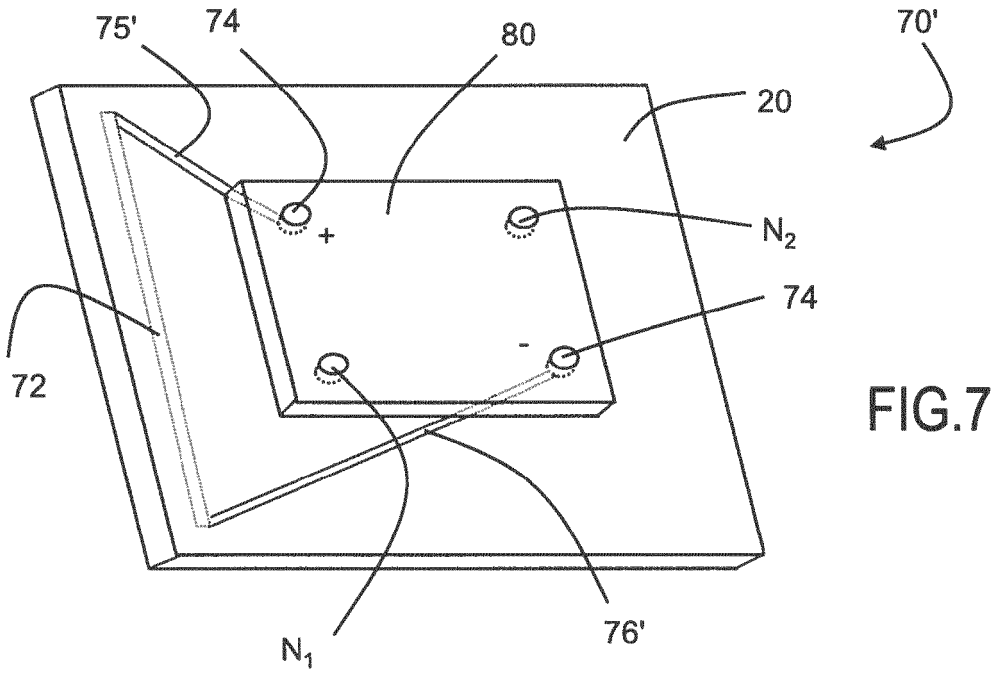


FIG. 7

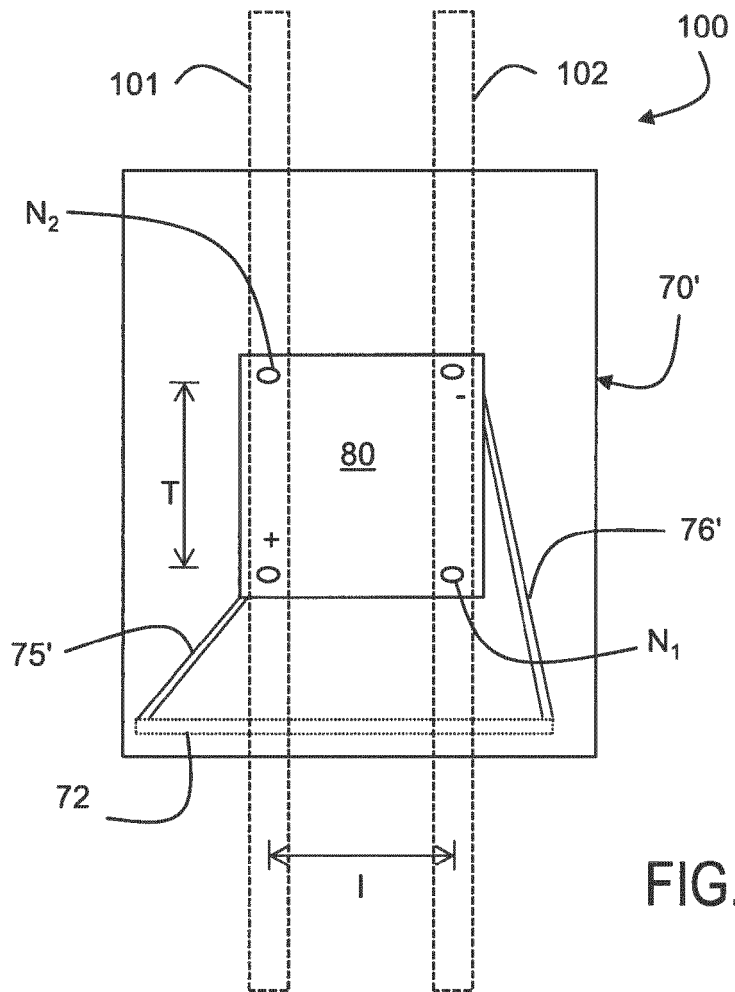


FIG. 8

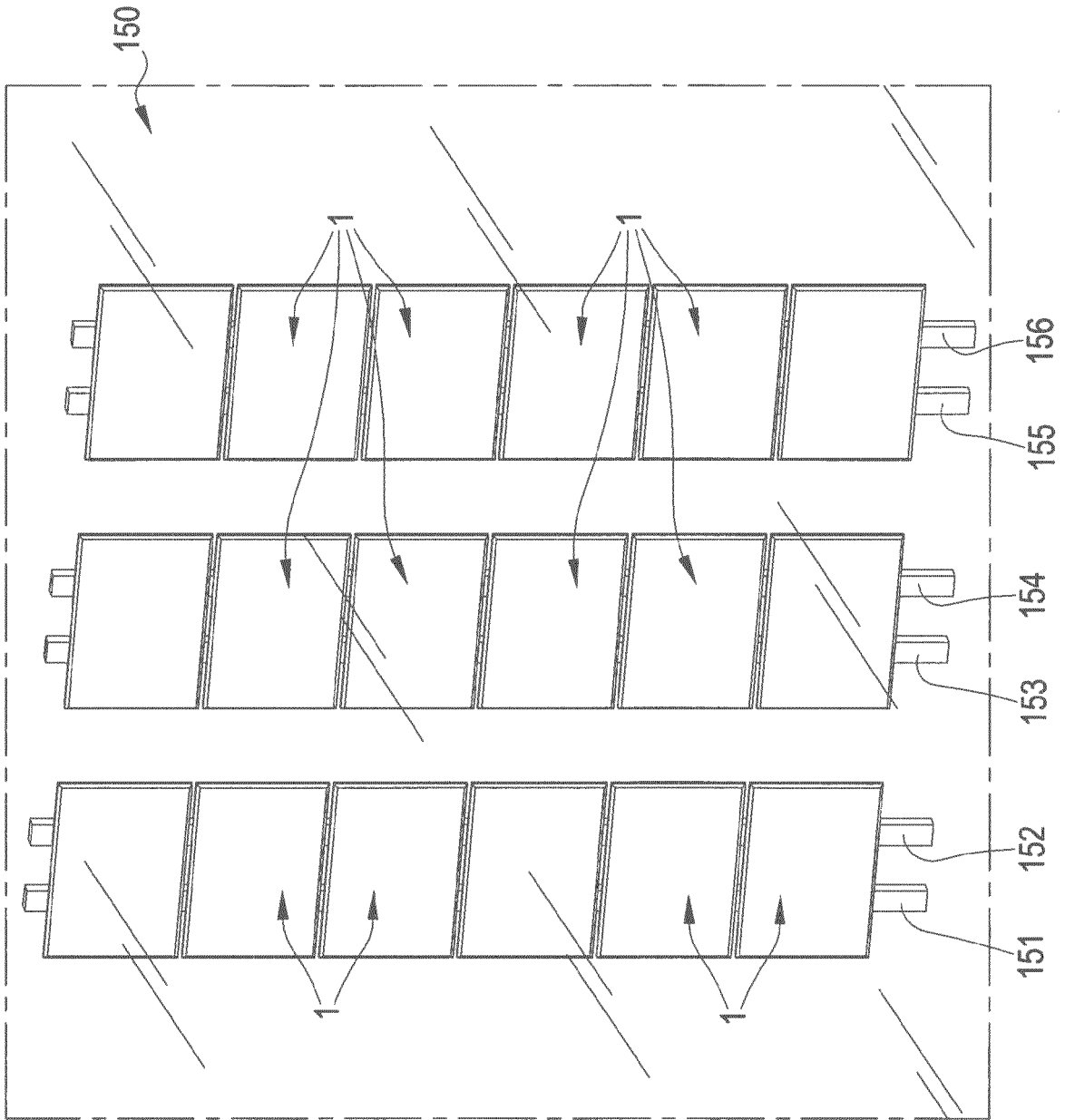


FIG. 9

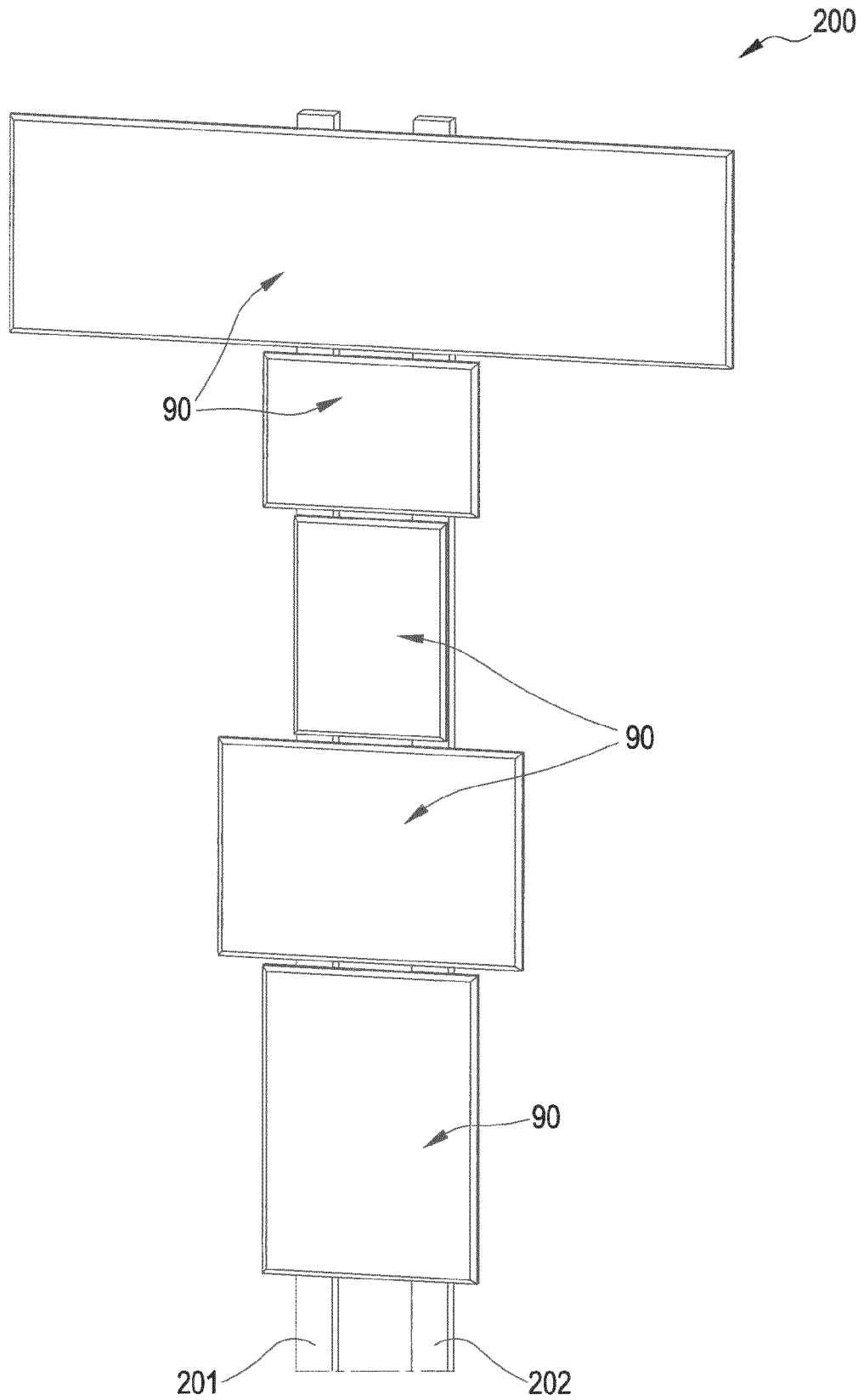


FIG.10



EUROPEAN SEARCH REPORT

Application Number
EP 14 19 1853

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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		& : member of the same patent family, corresponding document	

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